

Enovix Cell Architecture Enables Multiple Advantages for EV OEMs

23rd Annual Advanced Automotive Battery Conference

Dr. James Wilcox
Vice President, Mobility

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In some cases, you can identify forward-looking statements because they contain words such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "likely," "may," "plan," "potential," "predict," "project," "should," "target," "will" or "would" or the negative of these terms or similar expressions. Any forward-looking statements made by Enovix in this presentation are based on information available to us as of the date hereof and subsequent events may cause these expectations to change. Actual outcomes and results may differ materially from those contemplated by these forward-looking statements. We disclaim any obligations to update these forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

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Powering the Technologies of the Future

Improving performance through advanced cell design

Our goal is to create a Li-ion battery that can exceed the performance demands of the technologies of the future, from IoT devices and consumer electronics to EVs.

- New mechanical cell design with multiple advantages:
  - Enables materials with large volume changes (e.g. silicon)
  - Exceptional thermal performance enabling fast charge, reduced thermal gradients

- Headquartered in Fremont, CA with R&D and Manufacturing centers in India, Malaysia, and South Korea

- Shipping in consumer market starting in 2022

- >400 patents and patent applications

- Actively working with industry leading OEMs with a go to market focus of JV/Licensing



Enovix Journey to Commercialization

Founded in 2007 by Experts in 3D Architecture and Advanced Battery Technology



R&D Pilot Line Established for Prototype Batteries



Journey to Scale:
- HVM in Malaysia; Fab2
- India R&D Center
- Routejade Acquisition

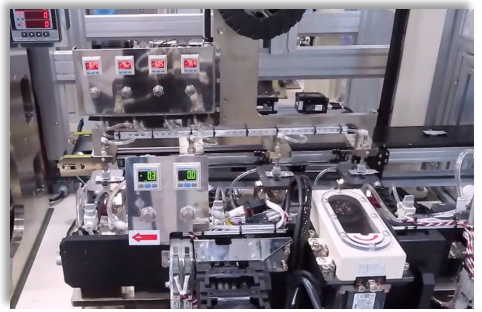
2007 2014 2021 2022 2023+

R&D Innovation to Proof of Concept; 100% Active Silicon Anode Battery

Listed on Nasdaq July 15, 2021 ENVX. Raised $400M+

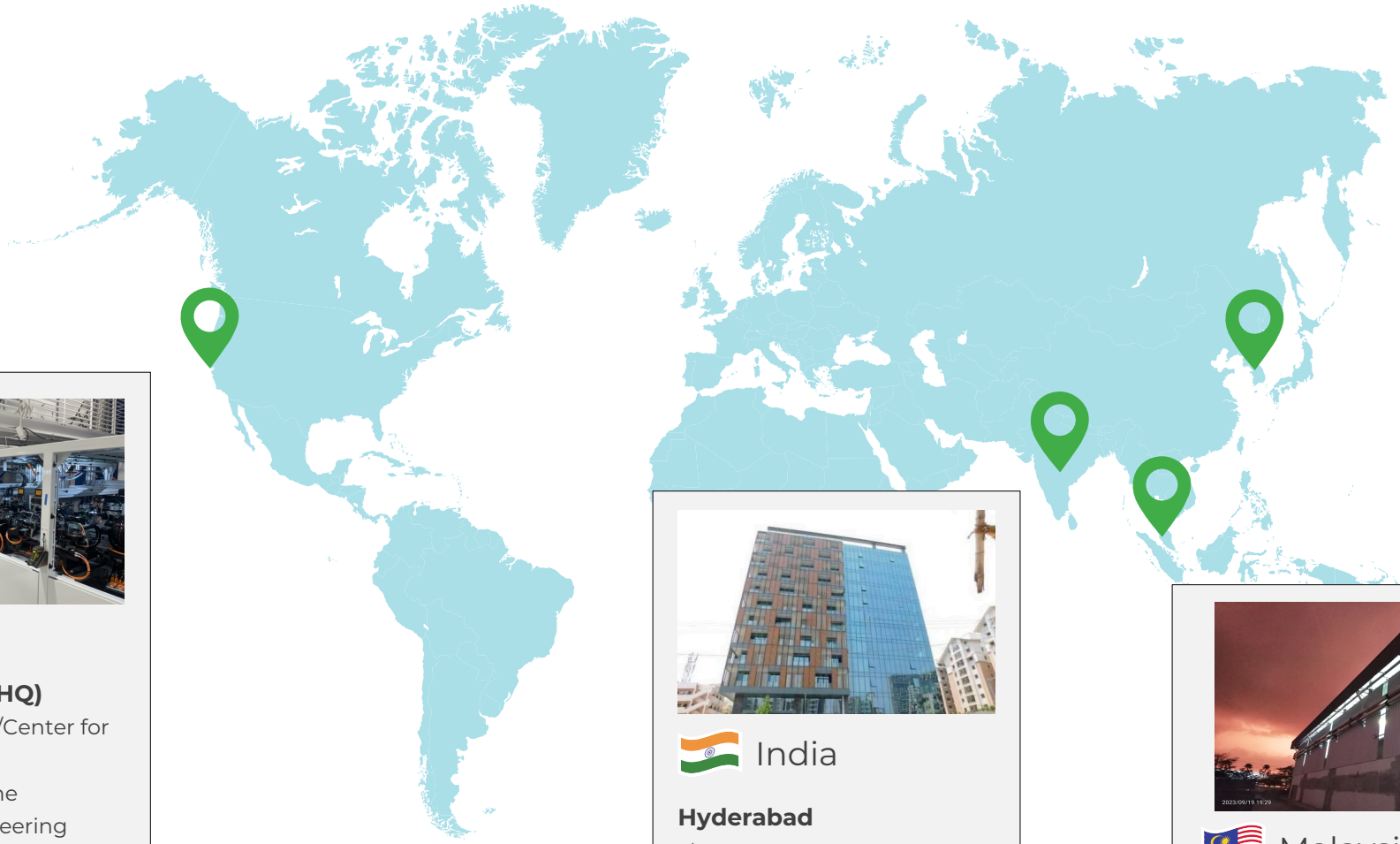


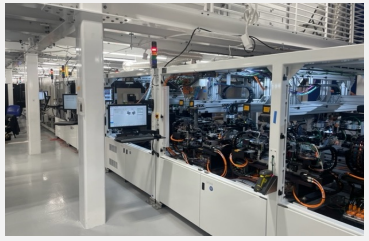
Fab1 Continues Build Out; Prototype & Commercial Batteries in Fremont, CA



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Global Footprint to Support World-Class Manufacturing and R&D





USA

Silicon Valley (HQ)

- ✓ Corporate HQ/Center for Innovation
- ✓ R&D Agility Line
- ✓ Process Engineering
- ✓ Materials Research
- ✓ Customer Qualification
- ✓ Automotive R&D

India

Hyderabad

- ✓ R&D
- ✓ AI/ML Modeling to Support Materials Research

Malaysia

Penang (Fab2)

- ✓ High-Volume Manufacturing.
- ✓ Space for Four Gen2 Production Lines
- ✓ Agility Line for Customer Qual



South Korea

Nonsan City (Routejade)

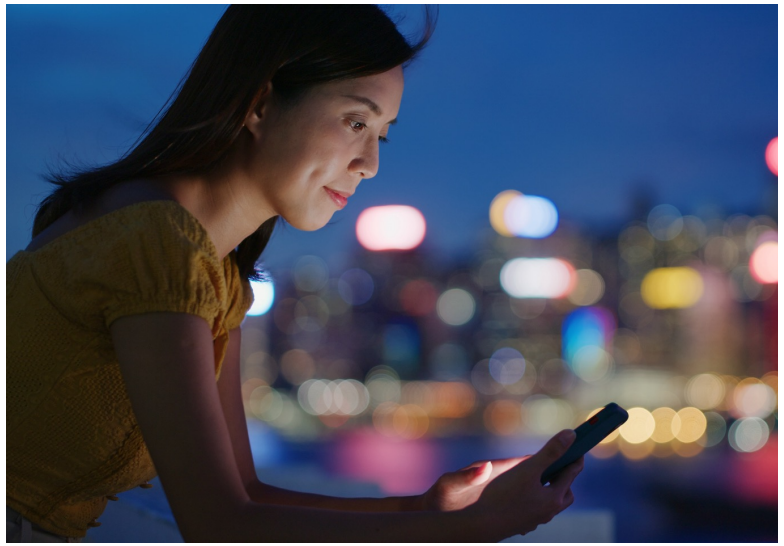
- ✓ Electrode Coating and Battery Production
- ✓ Two factories
- ✓ Four battery production lines and two coating lines

Addressing a $23B TAM by Enabling Advances in Mobile Technology

Enabling the Full Capabilities of Consumer Devices Today and in the Future

Mobile

’26 Battery TAM: $11B[2]



Engagements with **top tier OEMs, targeting multiple smartphone launches** between 2025 and 2026

IoT

’26 Battery TAM: $8B[1]



Shipping today to leading brands in wearables and active designs with leaders in a variety of high-volume IoT categories.

Computing

’26 Battery TAM: $4B[3]



Engagements with top PC OEMs and targeting launches on multiple 2026 laptops

1 Company estimates as of January 2023; IDTechEx Forecast Wearable Technology 2021-2031; IDC Worldwide AR/VR Headset Forecast 2022Q3; Avicenne Energy Battery Market for Video Games 2017-2030; Statista Number of IoT Connected Devices Worldwide from 2019-2030; Statista Consumption of Power Tools Worldwide by End User 2015-2027; Avicenne Energy Battery Market for Household Devices 2017-2030

2 Company estimates as of January 2023; IDC Worldwide Mobile Phone Forecast Update 2022-2026

3 Company estimates as of January 2023; IDC Personal Computing Devices Market Share Dec 2022; Statista Worldwide Tablet shipment from 2nd quarter 2010 to 3rd quarter 2022

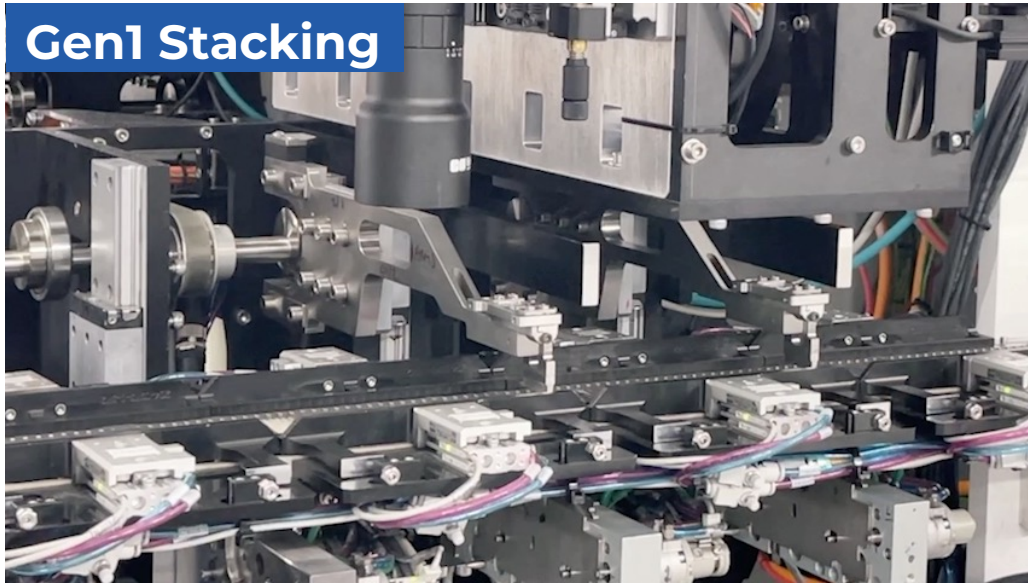
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Gen2 Designed to Build Batteries over 10x Faster Than Gen1

Significant Learning from Gen1 Captured; Upgraded Automation and Parallelism

Gen1

200W Laser Patterning
100 Units Per Hour (UPH)[1]
Partial Automated Production



Gen2 Design

1,000W Laser Patterning (Cut Speed Improved 5x)
Designed for 1,350 UPH[2]
High Speed Automation
Enhanced Parallelism and Metrology



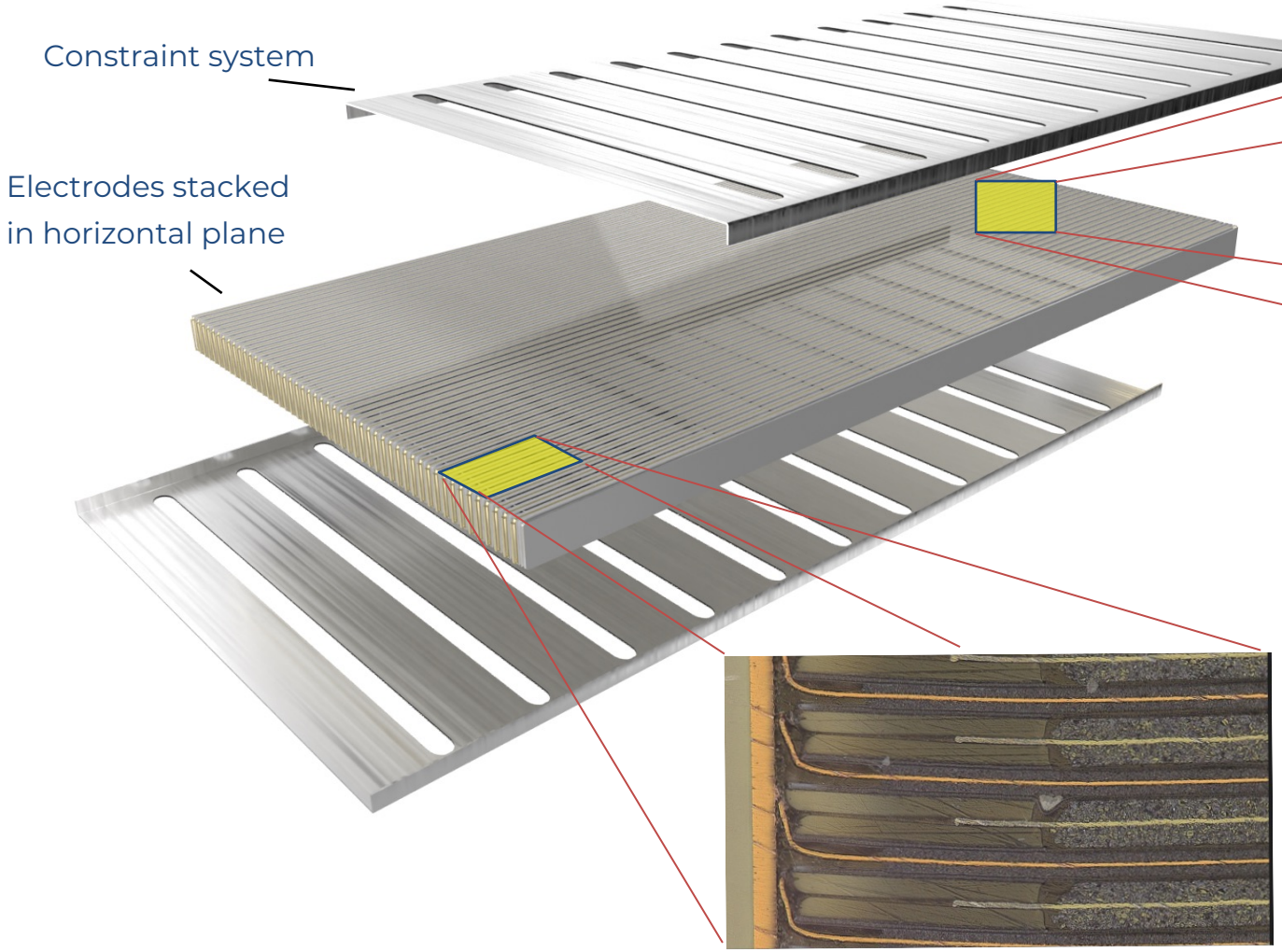
[1] Q4 2023 Gen1 production UPH when in operation goal
[2]Gen2 design (equipment currently being built to this specification)

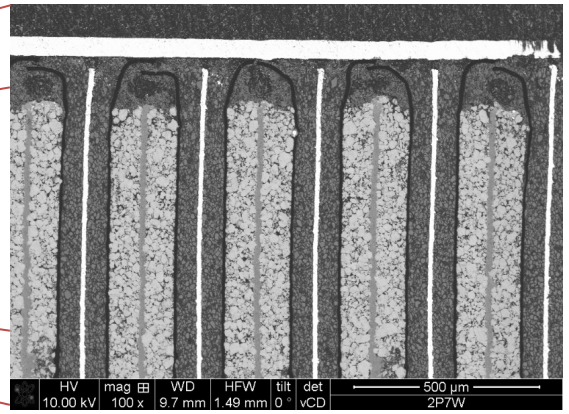


Enovix Cell Design

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Enovix Cell Architecture





Stacking orientation decreases constraining force from ~1.7 tons to ~210 lbs for cell phone sized cell*

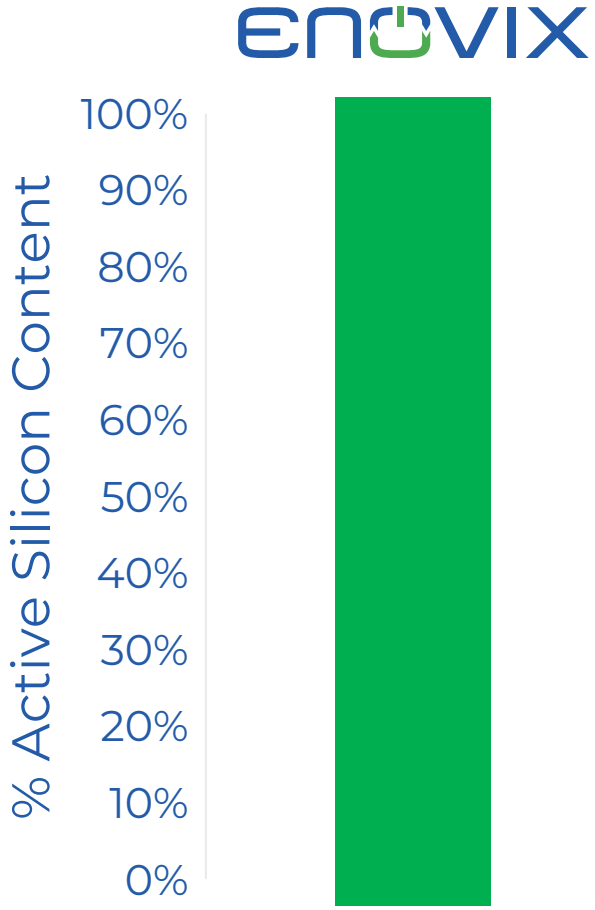
Tailor internal cell volume for active material expansion

Facile pre-lithiation, Brakeflow™ technology

*50x30x3 mm cell at 1.5kPSI stack pressure

Maximizing Silicon to Drive High Energy Density

Silicon Can Theoretically Store Over 2x the Lithium in the Anode than Graphite[1]

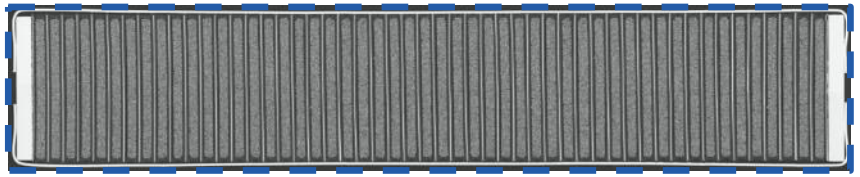


Lithium-Ion Incumbents[2]

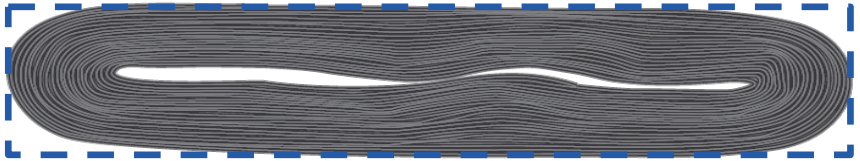
3-7%

Increased Silicon Content Enabled by Advanced Architecture

Enovix 3D Architecture + Integrated Constraint



Conventional Wound Lithium-Ion Cell

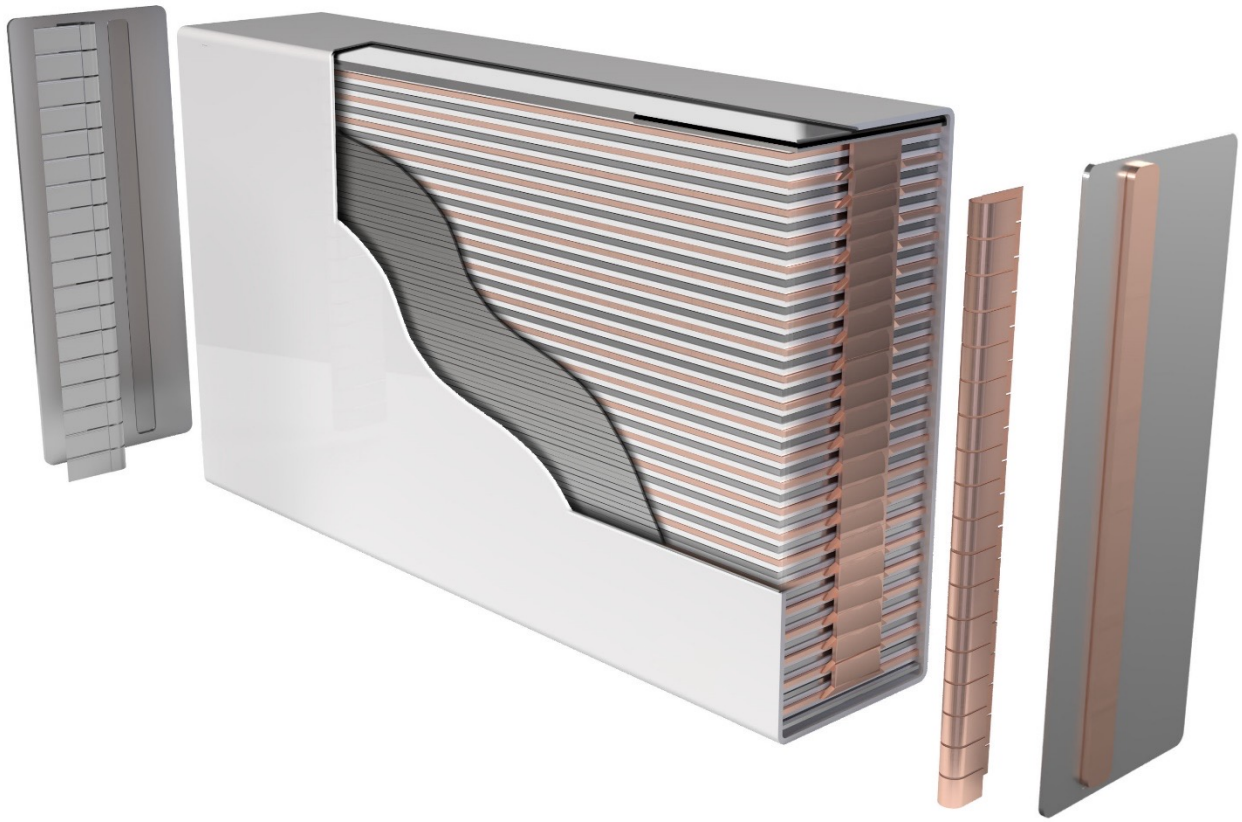


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[1] Silicon anode material capacity: 1,800 mAh/cc (de-rated from theoretical capacity of 2194 mAh/cc for Lithium trapping losses). Graphite anode material capacity: 800 mAh/cc (nominal capacity between host capacity of 841 mAh/cc and lithiated capacity of 719 mAh/cc)

[2] LG Chem and Panasonic; from UBS Global Research, May 2021

Enovix Architecture – EV Concept



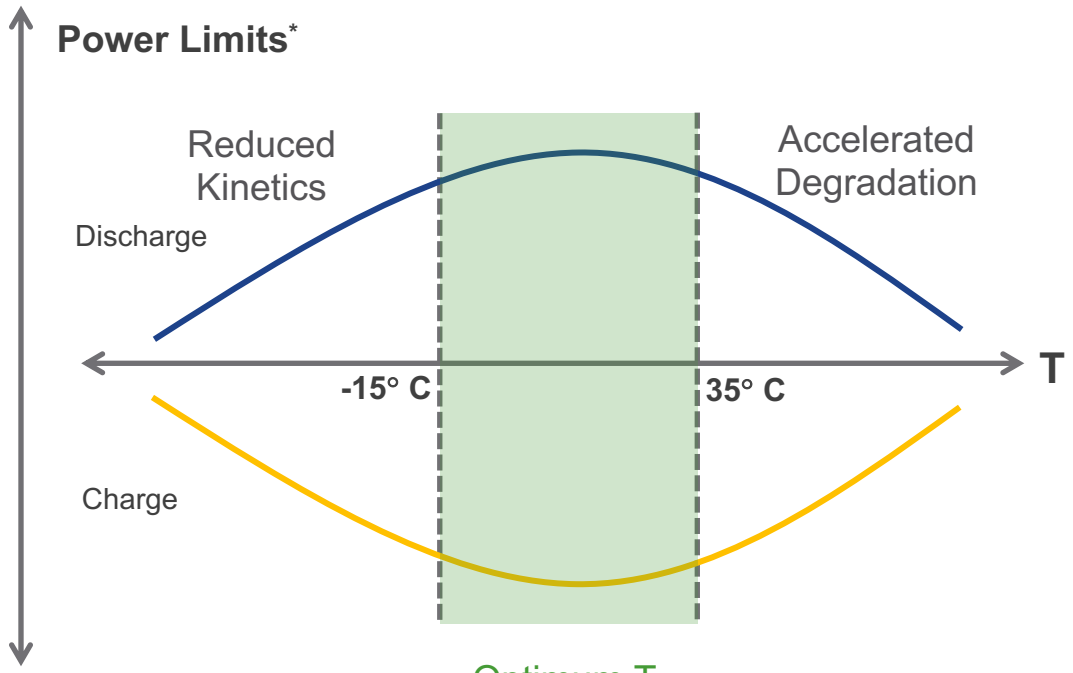


Benefits of Enovix Cell Design for EV Applications

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Temperature is a Key Limiter to Performance

Modern lithium ion cells optimized for specific temperature ranges



Cold weather performance – range and power Increased costs

Optimum T range for range, lifetime, reliability, safety etc.

Reduced power to manage thermals Increased costs

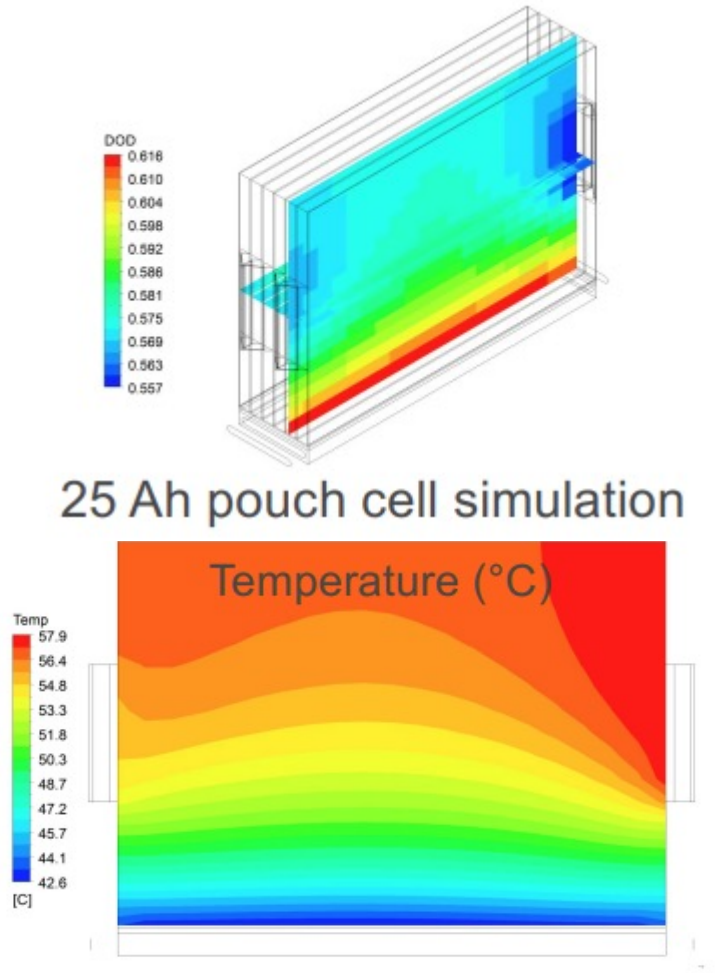
Optimized cell performance in a relatively narrow band of temperature

Operation outside of the optimum range at reduced performance to prevent degradation, ensure safety

*Adapted from Kandler Smith, NREL Milestone Report 2008 as shown in SAE2011 Alternative Refrigerant and System Efficiency Symposium….

Temperature is a Key Limiter to Performance

Cell design impacts temperature uniformity



Optimized cell performance in a relatively narrow band of temperature

Operation outside of the optimum range at reduced performance to prevent degradation, ensure safety

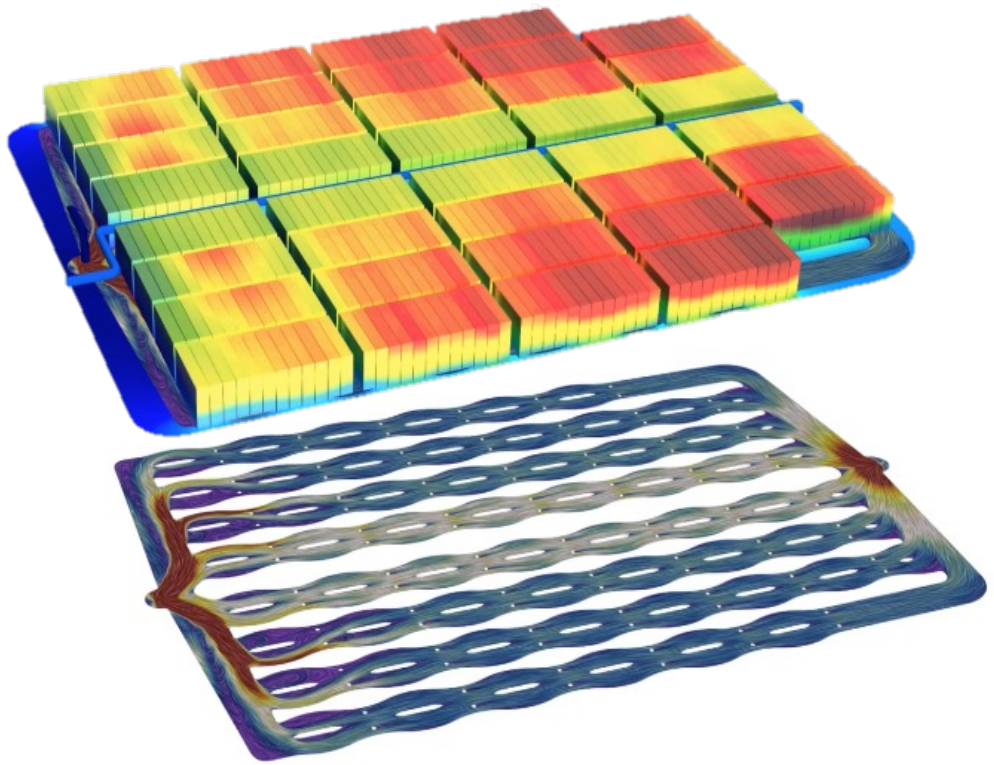
Internal cell temperature variation impacted by cell design due to asymmetric thermal properties of components

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*DOE AMR 2021, Xcel Program, V. Srinivasan, https://www.energy.gov/sites/default/files/2021-06/bat386_srinivasan_2021_o_5-22_1020am_LR_TM.pdf

Temperature is a Key Limiter to Performance

Pack cooling system further impacts cell temperature uniformity



Optimized cell performance in a relatively narrow band of temperature

Operation outside of the optimum range at reduced performance to prevent degradation, ensure safety

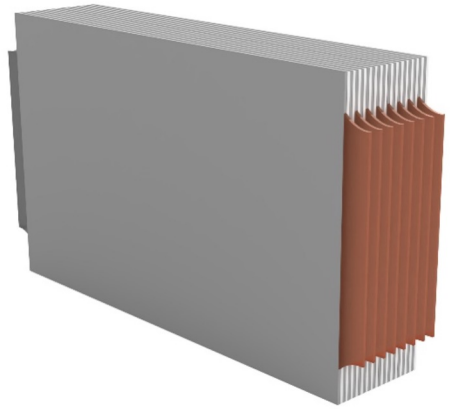
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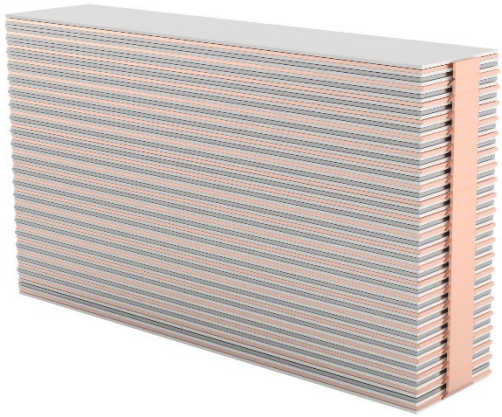
Temperature varies across pack due to coolant flow etc.

*Siemens - https://blogs.sw.siemens.com/simcenter/battery-pack-thermal-simulation/

Enovix Architecture Optimizes Thermal Performance

What's the best way to manage heat uniformity in a cell?





Typical solutions to reduce temperature variation:

- Reduce cell resistance
- Change cell form factor
- Increase pack capacity
- Oversize cooling system

Enovix approach:

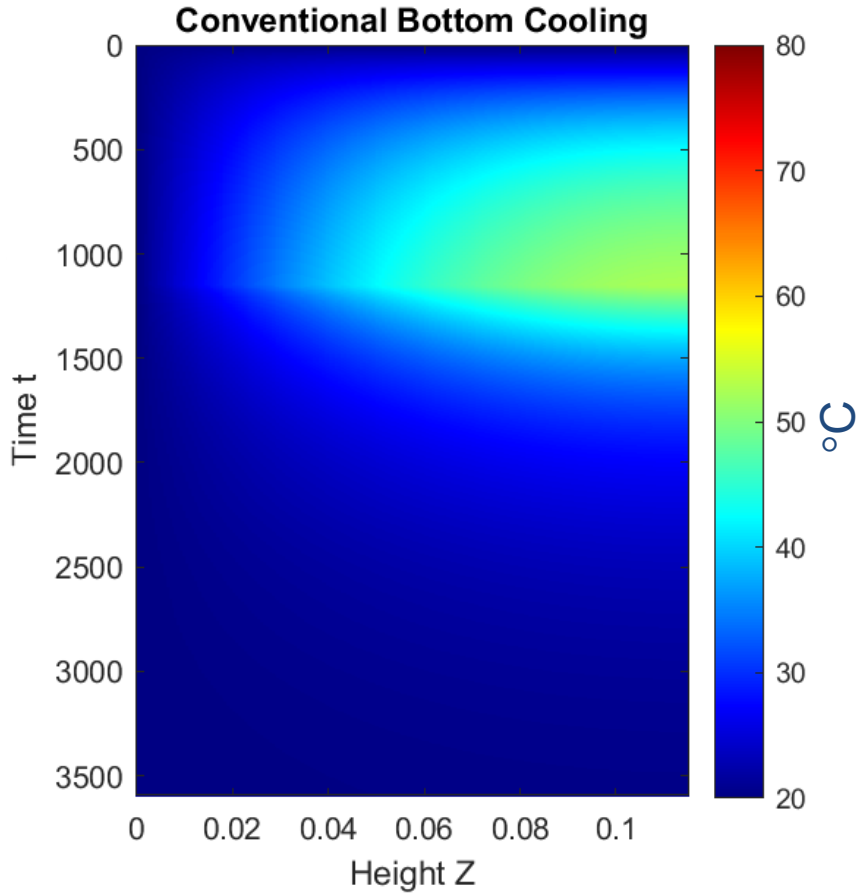
- Enable efficient heat movement in and out of the cell
- Align high thermal conductivity direction of cell to shortest dimension of the cell
- Utilize largest area of the cell

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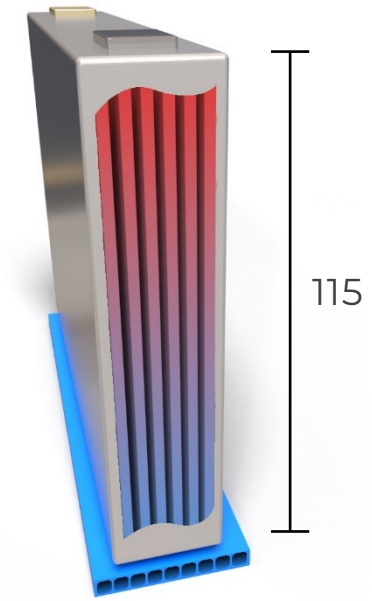
Reoriented Electrodes Designed to Deliver Excellent Thermal Performance

33X Higher* thermal conductivity to large face of prismatic cell

2.5C Fast Charging Temperature Profile



Cell Dimensions: 173 x 115 x 32 mm



Conventional Stack Cell Bottom-Cooled

ΔT_{max} = 31.9°C

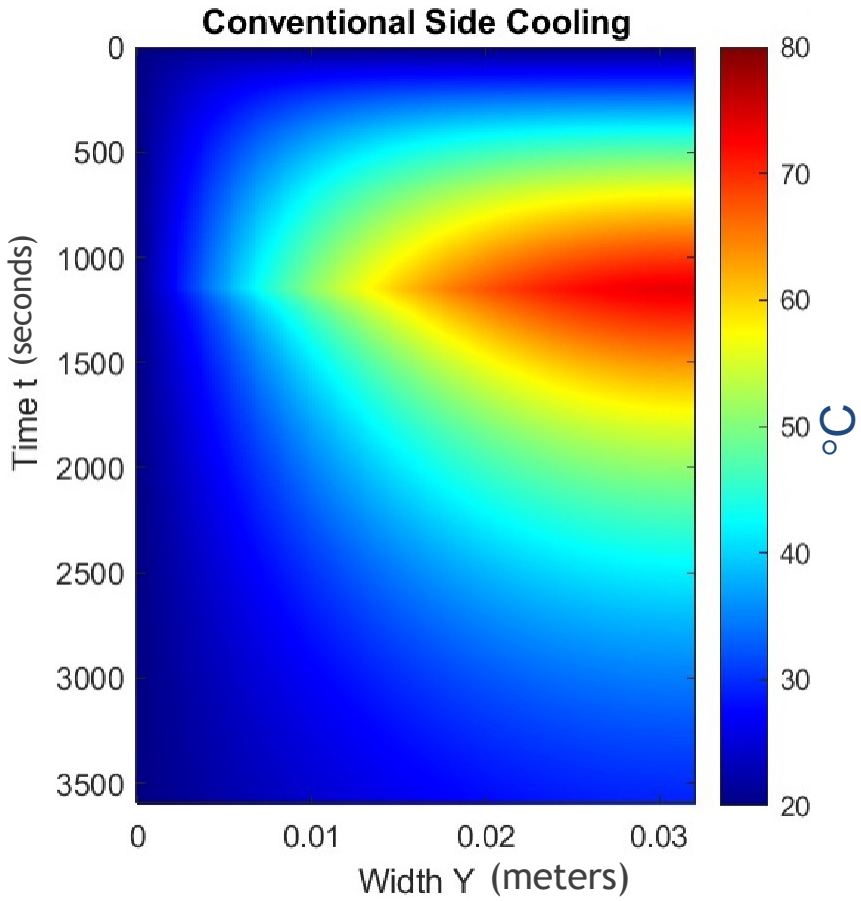
*Assumptions: 2.5C charging 0-80% SOC, 27.6 W/mK in-plane conductivity, 0.82 W/mK thru-plane conductivity, 1046 J/kg heat capacity, 2.4g/cc density, 25 ohm cm2 constant ASI, 4 mAh/cm2 electrode loading, 336 uM wave pair thickness, 1-dimensional heat transfer constrained to electrodes

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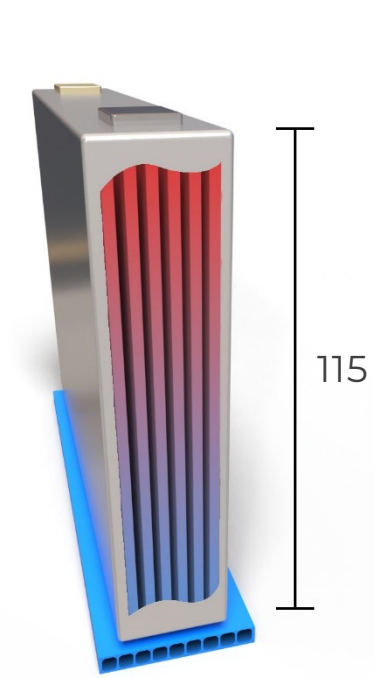
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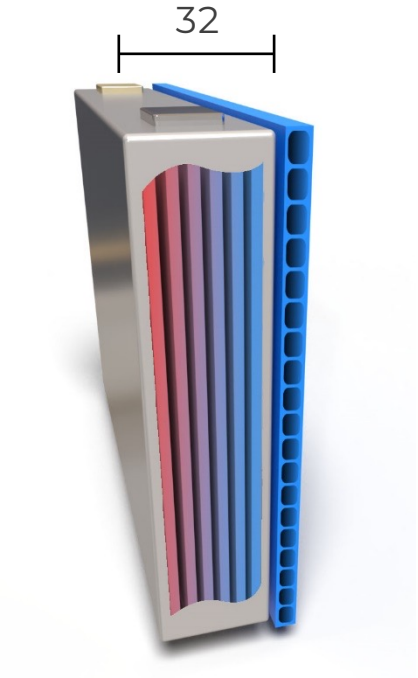


Cell Dimensions: 173 x 115 x 32 mm



Conventional Stack Cell Bottom-Cooled

$\Delta T_{max} = 31.9^{\circ}C$



Conventional Stack Cell Side Cooled

$\Delta T_{max} = 53.8^{\circ}C$

*Assumptions: 2.5C charging 0-80% SOC, 27.6 W/mK in-plane conductivity, 0.82 W/mK thru-plane conductivity, 1046 J/kg heat capacity, 2.4g/cc density, 25 ohm cm2 constant ASI, 4 mAh/cm2 electrode loading, 336 uM wave pair thickness, 1-dimensional heat transfer constrained to electrodes

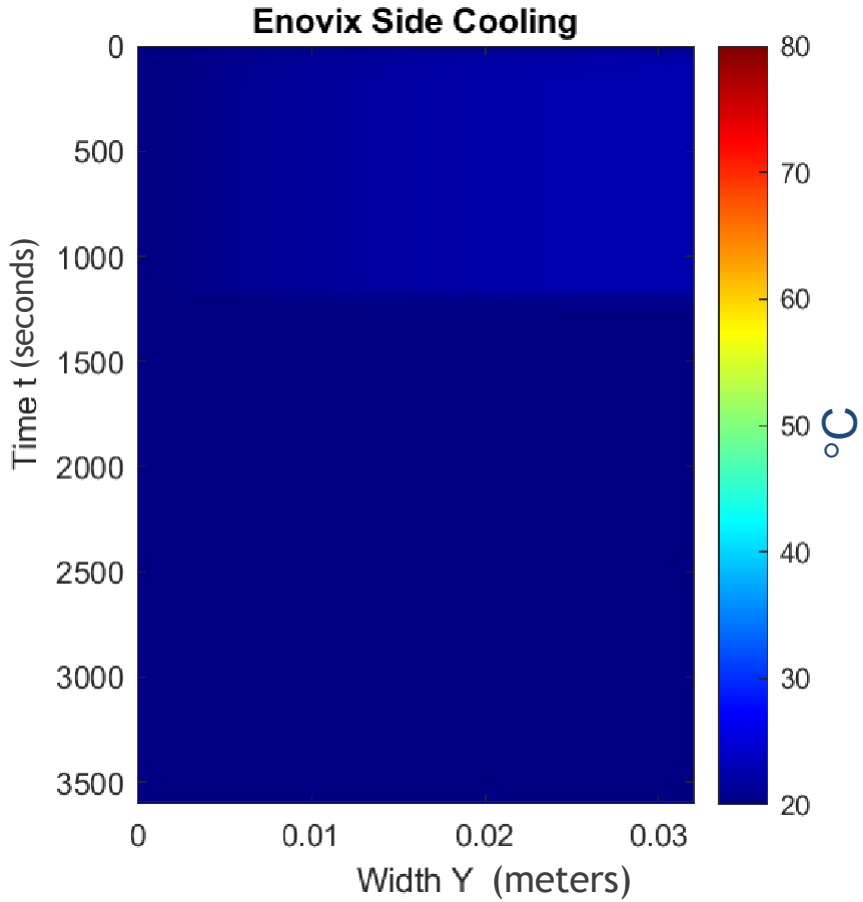
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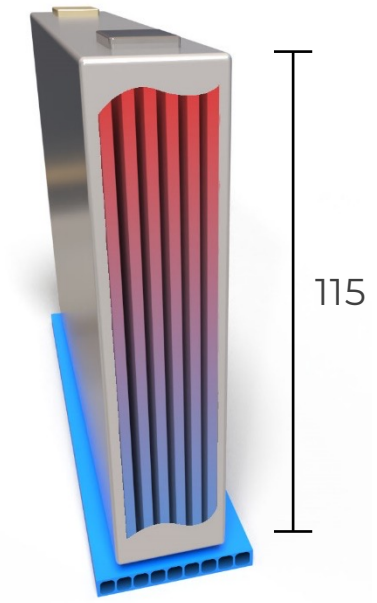
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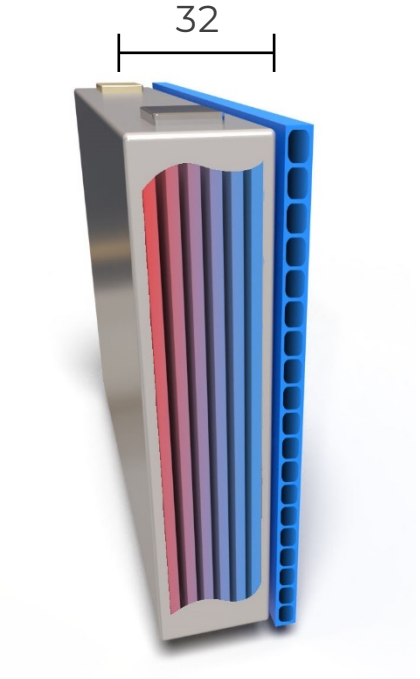


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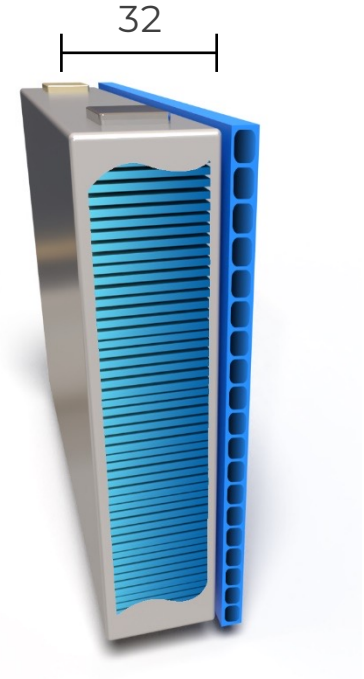
Conventional Stack Cell Bottom-Cooled

ΔT_{max} = 31.9˚C



Conventional Stack Cell Side Cooled

ΔT_{max} = 53.8˚C



Enovix Stack Side Cooled

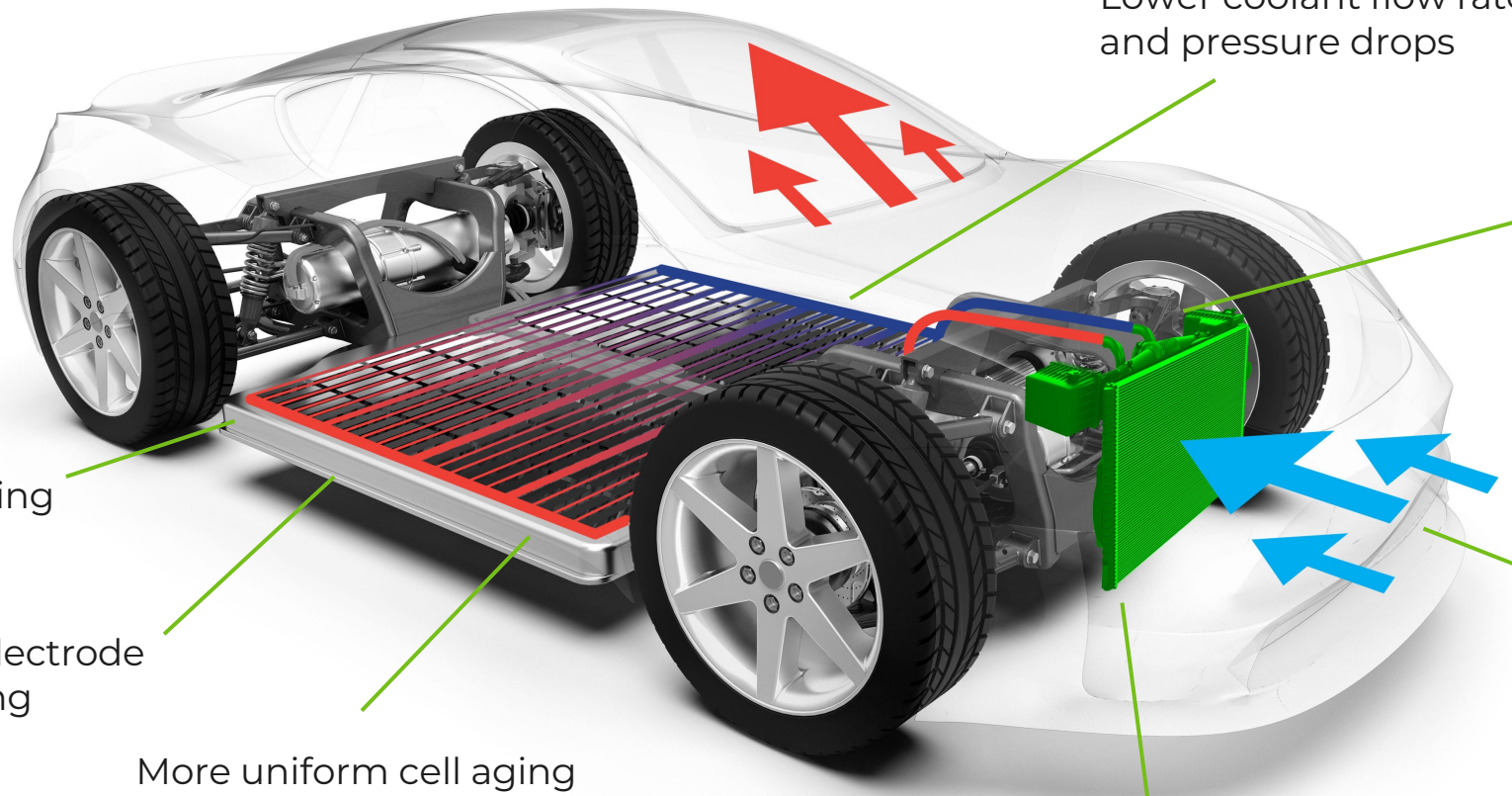
ΔT_{max} = 2.8˚C

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*Assumptions: 2.5C charging 0-80% SOC, 27.6 W/mK in-plane conductivity, 0.82 W/mK thru-plane conductivity, 1046 J/kg heat capacity, 2.4g/cc density, 25 ohm cm2 constant ASI, 4 mAh/cm2 electrode loading, 336 uM wave pair thickness, 1-dimensional heat transfer constrained to electrodes

Cell Thermal Design Key to System Performance

Significant opportunities to reduce system cost, improve performance



Lower coolant flow rate and pressure drops

Reduced compressor size, weight and power

Faster charging

Increased electrode loading

More uniform cell aging

Enables warmer coolant and greater heat rejection

Smaller radiator

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Enovix Cell Architecture Well-Suited to EVs

Advantaged vs. Conventional Cells[1]

~10x Improvement in cell internal temperature gradient

Material agnostic cell design

Integrated mechanical constraint system

Architecture validated in consumer electronics space with global leaders

Pursuing Industry Partner Strategy

Actively working with industry leading OEMs – Focus on JV/Licensing

Contact us:
Mobility@Enovix.com



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[1]Company estimates based on internal test data shown in Appendix slides 20-22
[2]The New Oil: Investment Implications of the Global Battery Economy - Morgan Stanley Research, Nov. 15, 2021



Thank you!